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ABSTRACT

This study obtained, under controlled conditions, a criterial measure of academic achievement that was typical of ordinary school learning tasks in order to determine the relationships between individual differences and the learning and retention of prose text. The criterion chosen was a multiple choice test on an ordinary written passage studied by the subjects specifically for this research. Selected as predictors were four attitude scales: (1) Internal-External Locus of Control; (2) Intellectual Achievement Responsibility; (3) Dogmatism; and (4) Intellectual Self-Confidence. All subjects--145 students enrolled in a university educational psychology course--filled out the attitude questionnaires during the first week of their course and were asked two weeks later to study the written passage as part of a program of research on study behavior. One group of subjects filled out the multiple choice test immediately after having finished studying the lesson and took the test again one week later without any prior indication of testing. The second group was required to retake the attitude battery after the lesson and took the test the following week. Results showed that subjects with low confidence lost more upon retesting than highly confident subjects. (HOD)

*Result of the study is a
forthcoming report on attitude-achievement interaction
authored by Cronbach & Snow*

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RELATIONSHIPS BETWEEN INDIVIDUAL DIFFERENCES AND
THE LEARNING AND RETENTION OF PROSE TEXT

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It is generally held that both motivation and ability influence academic achievement (AA). While most research has been directed toward discovery of relationships between measures of intellectual ability and AA, a sizeable array of evidence has also been gathered which demonstrates the importance to AA of motivation variables and most particularly attitudes. Past research investigating the relationships between attitudes and AA has been conducted according to one or the other of two paradigms:

1. carefully designed experimentation conducted in laboratory settings and employing relatively novel tasks and learning materials, such as serial verbal learning of nonsense syllables;
2. correlational studies in which measures of student attitudes are employed to predict relatively global measures of academic status.

The external validity of research incorporating laboratory tasks foreign to the classroom is necessarily open to question. In addition, the criterion of school grades, or scores on standardized achievement tests, represents learning histories so complex and different from one student to the next that correlations are typically low and difficult to interpret. It was, therefore, the purpose of this study to obtain

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a criterial measure of AA that was: a) typical of ordinary school learning tasks; and b) obtained under controlled conditions.

The criterion chosen was a multiple choice test on an ordinary written passage (Kropp and Stoker, 1966), studied by the Ss specifically for this research. Four attitude scales were selected as predictors: (1) Internal-External Locus of Control (I-E); (2) Intellectual Achievement Responsibility (IAR); (3) Dogmatism (Dog); and (4) Intellectual Self-Confidence (ISCS), a recently developed scale (Hiller, 1972) which is explained and described below.

Phenomenologically, the belief that one has the capacity to succeed at tasks demanding intellectual effort is the central fact of intellectual self-confidence. Theoretically, the strength and scope of this belief is a function of the individual's reinforcement history. A history of actual, or perceived, success would shape a positive conviction and failure a negative self-regard. In addition, if it is assumed that success constitutes positive reinforcement, then cues associated with intellectual activity will themselves acquire reinforcing properties (i.e., become positive secondary reinforcers). Thus the successful individual will develop a liking for intellectual activity. Furthermore, since the successful individual has been reinforced for his own efforts, self-reliance will also have been shaped. In summary, according to this analysis the belief that one is intellectually capable will necessarily be accompanied by two reinforced attitudes: first, a positive regard for intellectual pursuits; and second, an attitude of self-reliance. Therefore, the construct

definition for intellectual self-confidence incorporates reference to three behavioral tendencies: attraction to intellectual tasks, expectation for success, and self-reliance. The items of the ISCS have been written to measure one or more of these three component tendencies. It was hypothesized that self-confidence is a necessary condition for motivated, purposeful effort, so that an individual with low confidence is unlikely to succeed at demanding tasks.

In addition to the attitude data, scores on the ACT English verbal ability test were employed in the analyses.

METHOD

Subjects

All Ss (N=145) served during regular class periods to fulfill requirements of the Educational Psychology course in which they were enrolled at Southern Illinois University during the spring quarter of 1971.

Materials

The task required of the Ss was to study a lesson of about 1400 words which described an historical event (the Lisbon earthquake of 1755), and then to take a multiple-choice test on that lesson (both the lesson and test were adopted from materials developed by Kropp and Stoker, 1966).

Procedures

All Ss filled out the attitude questionnaires during the first

week of their course. ACT-English scores were obtained from administrative files. Two weeks later, the S were asked to study the lesson as part of a program of research on study behavior. Although all Ss performed at the same time in a large lecture room, they were randomly divided into two groups for testing, as follows:

Group A. Ss (N=73) filled out the multiple choice test immediately after having finished studying the lesson. One week later, the Ss were asked to re-take the same test without prior indication of testing.

Group B. Ss (N=72) were required to retake the attitude battery after having finished studying the lesson; they were not given the test at that time. During the next week, they were required to take the test for the first time, while Group A was re-tested.

RESULTS

Correlations for Group A immediate test performance were: ISC, .46 ($p < .0005$), I-E .25; IAR, .22 ($p < .05$); Dog, ns; ACT Verbal Ability, .41, and shrunken MULT R for the predictors = .55.

For Group A retested after one week, correlations with the criterion were: ISC, .53; I-E, .25; IAR, .23; Dog, -.20; ACT Verbal Ability, .41; and shrunken MULT R = .45. Results classified by sex are shown on Table 1.

Insert Table 1 about here

One analysis was performed by dividing Ss into three approximately equal groups on the basis of their ISC scores. Analysis of variance demonstrated that Ss with low confidence lost more upon retesting than highly confident Ss, $F(2, 70) = 4.4, p < .025$.

CONCLUSIONS

Results for the confidence scale, ISCS, lent support to the widely held view of educators that confidence in ones abilities is important for learning, as well as sheer ability. The differential loss of retention for Ss as a function of confidence suggests that highly confident Ss are better at retention as well as on acquisition. A tentative hypothesis for the retention effect is that low confidence Ss terminated lesson-related thinking as soon as they finished the first test, whereas highly confident Ss, seeing the experiment as an interesting challenge to be won, continued to think about the lesson and test. Such added rehearsal would have differentially maintained their initial learning and led to the retention effect observed. This effect was replicated in a subsequent experiment (Miller, 1972), which also found that the magnitude of the correlation between ISCS scores and learning was inversely related to S ratings of lesson readability.

Dogmatism and Locus of Control correlated with the criterion as predicted, but the variance accounted for was rather low, about 4 to 6 per cent.

The separate analyses for the sexes demonstrated that all attitude scales were correlated significantly and more highly with male learning scores, while verbal ability was a better predictor for the females. The same pattern of correlations has also been found in a related study (Kirby and Hiller, 1973) for Freshman high school students.

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TABLE 1

Means, Standard Deviations, and Intercorrelations for Immediate and Delayed Test Groups^a.

MALE Data	N	$\bar{X}$	SD	Correlations					
				IAR	I-E	ISC	DOG	GPA	ACT
IAR	67	24.70	4.33	1					
I-E	67	12.63	4.00	.51*	1				
ISC	67	15.00	4.01	.20	.19	1			
DOG	67	145.89	24.43	-.22	-.21	-.32#	1		
GPA	67	3.62	.46	-.07	.14	.29#	-.16	1	
ACT ENGLISH	46	19.57	3.55	.27	.24	.29	-.14	.37#	1
IMMED TEST	35	32.31	5.81	.30	.48#	.57*	-.39#	.34	.36 (ACT N = 24)
POST-TEST	35	29.54	7.12	.33	.44#	.67*	-.49#	.45#	.22 (ACT N = 24)
DELAYED TEST	32	28.28	5.47	.06	.09	.26	-.19	.34	.46 (ACT N = 22)

FEMALE Data	N	$\bar{X}$	SD	Correlations					
				IAR	I-E	ISC	DOG	GPA	ACT
IAR	78	25.68	3.97	1					
I-E	78	12.28	3.80	-.07	1				
ISC	78	15.12	3.72	.33#	.00	1			
DOG	78	152.24	21.95	-.07	-.03	-.13	1		
GPA	78	3.89	.55	.04	-.05	.04	-.08	1	
ACT ENGLISH	65	21.23	3.72	.06	-.13	.07	-.13	.47*	1
IMMED TEST	38	32.34	4.53	.14	-.02	.32	.15	.46#	.51# (ACT N = 33)
POST-TEST	38	31.18	5.59	.08	-.02	.34	.07	.43#	.54# (ACT N = 33)
DELAYED TEST	40	27.75	4.73	.13	.14	.24	-.19	.40#	.36 (ACT N = 32)

^a. Note that both the IAR and I-E scales are scored for internal control, contrary to the conventional scoring procedures.

$\alpha_p = .05$, one tail
 $\alpha_p = .01$, one tail
 $*p = .0005$, one tail

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